

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D C

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JUN 25 1994

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of

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Guidelines for Evaluating the  
Environmental Effects of  
Radiofrequency Radiation

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) ET Docket No. 93-62

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**COMMENTS OF NATIONAL PUBLIC RADIO**

January 25, 1994

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## SUMMARY

The impact of any radiofrequency radiation (RFR) standard upon public radio must be analyzed more thoroughly than the Commission has done so far.

Public radio stations must know the acceptable measurement procedures for measurement of RFR. Equally important, they must know which measurement techniques are acceptable to the Commission. The measurement guidelines proposed by the Commission are insufficient and will not permit practical compliance by public radio stations. Induced and contact current measurements could be a considerable financial burden for many public radio stations. Non-measurement techniques should be recognized, where possible, in order to minimize the need for costly measurements.

The issue of equipment standards for RFR measurement equipment and protective clothing needs to be addressed further in light of the claims accompanying such products. Misuse of such products could result in RFR exposure in excess of guideline values.

The Commission should consider initiating a Further Notice of Proposed Rule Making so that the important information submitted early on in this proceeding may be addressed and further impact analysis performed. Once new standards are adopted, public radio stations should have sufficient time to comply with any new RFR standards.

The Commission should renew its efforts for establishment of a uniform/single federal RFR standard. Lack of such a standard will result in ongoing and needless controversy and confusion.

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**COMMENTS OF NATIONAL PUBLIC RADIO**

**I. INTRODUCTION**

National Public Radio (NPR) submits these comments in response to a Federal Communications Commission (FCC) Notice of Proposed Rule Making (Notice) in the above referenced proceeding. NPR is a nonprofit, noncommercial organization that provides programming and interconnection services to 489 full-service public radio stations and represents them in developing and maintaining a viable and diverse public radio service for the American public. The FCC's proposed revision to its radiofrequency radiation guidelines affects these stations.

Many comments in this proceeding were filed before the January 25, 1994 comment deadline. NPR's review of these comments, and our own recent analysis of the proposed rules' impact on NPR member stations, reinforces NPR's belief that the Commission should move cautiously in this proceeding. The issues discussed below should be resolved before the adoption of new rules.

## II. THE IMPACT OF NEW RFR GUIDELINES ON PUBLIC RADIO HAS NOT BEEN ADEQUATELY ASSESSED BY THE COMMISSION

Before adoption of a new RFR exposure standard, its impact requires assessment so that potential costs may be weighed against potential benefits. The Commission, in proposing the ANSI/IEEE C95.1-1992 standard, provides only a preliminary impact analysis.<sup>1</sup> Referenced is an EPA report estimating that about 17 percent of the stations it studied in 1985 would require corrective action to meet the new 1992 ANSI/IEEE guidelines.<sup>2</sup> As the Commission observes, induced current limitations were not considered in that 1985 report. NPR believes the matter of assessing induced currents and complying with that portion of the new ANSI/IEEE guidelines will be a significant burden to public radio stations.

Those guidelines say that "Evaluation of the magnitude of induced RF currents will normally require a direct measurement."<sup>3</sup> This would pose a considerable burden to public radio stations, as they would have to purchase or rent equipment for measuring induced currents, or retain consulting engineers to conduct the measurements. Either option could cost several thousand dollars and would require station staff to spend a considerable amount of time monitoring the RFR environment. Because the environment surrounding a facility can change over time, this would likely be an ongoing expense. Also, since the ANSI/IEEE guidelines are a "living standard," any changes to that standard would likely require new measurements.

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<sup>1</sup>Notice at Appendix B.

<sup>2</sup>U.S. Environmental Protection Agency, Office of Radiation Programs, Washington, D.C. 20460, "An Estimate of the Potential Costs of Guidelines Limiting Public Exposure to Radiofrequency Radiation from Broadcast Sources." Vol. 1: Report, EPA 520/1-85-025, July 1985.

<sup>3</sup>ANSI/IEEE Standard C95.1-1992 at 14.

One way to reduce the need for induced current measurements is to determine some level of field strength below which the induced current limit is unlikely to be exceeded. The National Association of Broadcasters (NAB) has prepared a proposed revision of the FCC's Office of Science and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation." That proposed revision includes a newly developed table of field strengths below which encroachment of the induced current limits is unlikely.

NPR has conducted a survey of its member stations to determine their compliance under the induced current field strength limits in the NAB's proposed revision to Bulletin No. 65. Of those stations responding, approximately one-third exceed the field strength standard based on measured or predicted field strengths. Since these stations have failed this proposed threshold test for the avoidance of induced current measurements, they may have to perform measurements of induced currents. This could be an added expense of several thousand dollars for each of these stations. If we assume an annual cost of \$2000 per station, the added expenses to one-third of NPR's 489 member stations could total more than \$300,000 per year for the induced current measurements alone. This figure does not include compliance verification costs for other parts of the proposed ANSI/IEEE guidelines. For example, the proposed revision to OST Bulletin No. 65 concludes that consideration of contact currents should be subsumed by consideration of induced currents; if this is not the case, compliance verification costs would be increased even more. The figure also does not include costs of changing transmission facilities or otherwise modifying operations to bring stations into compliance; such costs would be dramatically higher. A large number of public radio stations are simply unable to absorb such increased costs, particularly

within a short time frame. Such stations are usually forced to make cuts in programming or personnel in order to accommodate these types of expenses. It is imperative that the Commission do all it can to ease the burden of this proposed change on public radio stations, many of whom operate on razor-thin margins. Because of these uncertainties, the Commission should carefully assess the impact of the proposed guidelines on its licensees before adopting new rules in this proceeding.

III. NON-MEASUREMENT ANALYSIS TECHNIQUES SHOULD BE RECOGNIZED BY THE COMMISSION TO MINIMIZE MEASUREMENT EXPENSE TO STATIONS

As discussed above, verification of compliance with the new guidelines could impose a substantial financial burden on public radio stations. NPR urges the FCC to adopt non-measurement analysis procedures analogous to those in FCC OST Bulletin No. 65, to the maximum extent possible, to minimize station costs. A new and expanded version of that document, with appropriate charts, graphs, and simple formulae, would enable many stations' technical staff to perform evaluations of their RFR exposure levels with minimal outside assistance. Such a document should be recognized by the Commission and made available to the public before, or at the time of, the adoption of new RFR guidelines.

IV. SPECIFIC MEASUREMENT PROCEDURES SHOULD BE RECOGNIZED BY THE COMMISSION

If a station must perform measurements under the new standard, it will need to know which measurement practices are acceptable to the Commission. For compliance with ANSI/IEEE C95.1-1992, the Commission proposes, and requests specific comment on, use of ANSI/IEEE

C95.3-1992 guidelines on measurement procedures for RFR measurement.<sup>4</sup> ANSI/IEEE describes these guidelines as follows:

This document is intended primarily for use by engineers, biophysicists, and other specialists who are familiar with basic electromagnetic (EM) field theory and practice, and the potential hazards associated with EM fields. It will probably be most useful to bioeffects researchers, instrument developers and manufacturers, those developing calibration systems and standards, and individuals involved in critical hazard assessments or surveys.<sup>5</sup>

NPR's review of this document reveals that its utility to broadcast station personnel is limited. As with the new ANSI/IEEE exposure guidelines, the measurement guidelines are general and not directed to any particular use of radiofrequency energy. Much of the document pertains to esoteric matters, such as equipment calibration and specific absorption rate measurements, that are unrelated to the practical aspects of routine RFR measurement. Reliance on this document alone will force more licensees than necessary to obtain, at significant expense, third-party assistance to measure the RFR environment around a facility.

The relevant information in this document could be distilled and expanded upon — and made more practical to station personnel — through revision or addition of pertinent sections of OST Bulletin No. 65. For example, stations will need guidance in distinguishing between “controlled” and “uncontrolled” environments.

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<sup>4</sup>Notice at para. 28. “Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Field - RF and Microwave.” (IEEE C95.3-1991; also designated ANSI/IEEE C95.3-1992 by the American National Standards Institute -- hereinafter, “Recommended Practice”). This document is a revision of ANSI C95.3-1973 and ANSI C95.5-1981.

<sup>5</sup>Recommended Practice at 11.



V. STANDARDS ARE REQUIRED FOR DEVICES AVAILABLE FOR MEASURING ELECTROMAGNETIC FIELDS AND FOR PROTECTIVE CLOTHING

The Commission requests comment on RFR measurement equipment and protective clothing.<sup>6</sup> There appear to be no equipment performance standards for devices expressly marketed as suitable for determining compliance with radiofrequency radiation standards. NPR believes the Commission or another appropriate federal agency should research and promulgate such standards. In several respects, some currently available suffers from qualitative and reliability problems.

For example, commonly-used broadband field strength meters operate by sampling the energy picked up by three orthogonal elements (dipoles for electric field, and loops for magnetic field) and sending the energy from each element separately to a processing unit. This unit combines the three signals to produce the resultant meter reading. These elements contain diodes that can and do fail. Also, the multi-conductor cable connecting the probe to the processing unit can develop an open connection at the connectors or in the cable itself due to repeated flexing. There are often no apparent symptoms when these failures occur, and the problem goes undetected until the instrument is calibrated by the manufacturer. Meanwhile, the field strength reading shown by the instrument is deceptively low. It would seem to be a simple matter for manufacturers to add circuitry to these measurement devices that would continuously test for lack of energy from one or more of the elements, and alert the operator to such a condition through an alarm.

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<sup>6</sup>Notice at para. 29.

The issue of personal monitors/dosimeters also requires scrutiny. Certain of these monitor devices have been the subject of allegations regarding inaccurate marketing and product labeling schemes. Specifically, marketing and labeling claims say the monitors, without qualification or restriction, test for the incurrence of the ANSI/IEEE C95.1-1992 standard above a certain percentage threshold. Critics contend, however, that the devices monitor a small subset of that standard -- the magnetic field component. In a near-field environment, the electric field strength may be many times the magnetic field strength, which could result in exposure in excess of ANSI/IEEE guideline values unbeknownst to the wearer of the device. Furthermore, these monitors only measure at one point on the wearer's body; whole-body exposure is not tested as is called for in the new standard. In addition, the devices do not test for induced or contact currents. NPR believes that equipment authorization or certification of such instruments should be promulgated by the Commission to assure that devices claimed to test the proposed standard have a high degree of actual compliance with the proposed standard. Marketing and labeling of sub-standard devices should explicitly state that use of these devices may result in field strength exposures in excess of guideline values without the user's knowledge.

The Commission requests comment on the usefulness of RF protective clothing. In the hands of qualified professionals, such clothing is effectively used today when it is necessary to enter an area that would otherwise result in excessive RFR exposure. As with dosimeters, however, the limited effectiveness of such clothing can lead to a false sense of security. Protective clothing limits exposure by providing a fixed amount of attenuation to RF fields. In a sufficiently high field strength environment, individuals inside the protective clothing can experience RFR exposures in excess of ANSI/IEEE guidelines. Furthermore, if a user does not correctly don the

protective clothing, or if that clothing is damaged while the user is in a high RFR environment, exposure in excess of the ANSI/IEEE guidelines can result.<sup>7</sup>

All of the above equipment can be a useful part of a station's RFR compliance program, but only after careful evaluation, express disclosure, and clear explanation of both the advantages and limitations associated with this equipment's use.

VI. PUBLIC RADIO REQUIRES A REASONABLE TIME TO COMPLY WITH NEW STANDARDS

As the Commission recognizes, compliance with the new ANSI/IEEE guidelines could impose significant burdens on licensees.<sup>8</sup> The Commission proposes to continue the requirement that such evaluations be made at the time of application for a construction permit, license renewal, or other Commission authorization. All such applications submitted after the effective date of the standard would be evaluated following the new 1992 ANSI/IEEE guidelines.

As the Rationale of the 1992 ANSI/IEEE standard states, "No [emphasis supplied] verified reports exist of injury to human beings or of adverse effects on the health of human beings who have been exposed to electromagnetic fields within the limits of frequency and SAR specified by previous ANSI standards, including ANSI C95.1-1982."<sup>9</sup> The new standard is an extension of, and is in many ways consistent with, the old standard. Accordingly, there appears to be no

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<sup>7</sup>See letter of April 14, 1993, from the Director, Directorate Technical Support, Occupational Safety and Health Administration (OSHA), to Dr. Thomas P. Stanley, which states in part "The variable working conditions at jobsites and possible alterations or misapplication of an otherwise safe product could easily create a hazardous condition beyond the control of the manufacturer."

<sup>8</sup>Notice at para. 26.

<sup>9</sup>ANSI/IEEE C95.1-1992, Section 6 (Rationale), page 23.

urgency in requiring stations to come into compliance. At a minimum, licensees should have several years to comply with the new standards once they are in effect.

VII. THE COMMISSION SHOULD PROCEED CAUTIOUSLY TOWARD THE ISSUANCE OF AN ORDER IN THIS PROCEEDING

NPR expects that the Commission will receive a large volume of new and useful information in the initial pleading cycle that will be valuable to it and other interested parties. The Commission should delay issuance of a final Order until there has been sufficient opportunity for full consideration of such new information and resolution of the matters discussed above. Procedurally, this resolution might take the form of one or more Further Notices of Proposed Rulemaking. To aid in the resolution of these issues, the Commission may want to form an Industry Advisory Committee to debate and reach agreement on outstanding issues.

VIII. THE COMMISSION SHOULD ACTIVELY SEEK A UNIFORM FEDERAL STANDARD FOR RADIOFREQUENCY EXPOSURE

The Commission notes that it is not the expert agency for evaluating the effects of RF radiation on human health and safety, and thus must use standards and guidelines developed by those with appropriate expertise.<sup>10</sup> Those with the expertise, however, have not reached consensus.

In its comments, the Environmental Protection Agency (EPA) says the 1992 ANSI/IEEE RFR standard contains "flaws," and that many fundamental characteristics of the standard lack "explanation, consistency, and well-founded justifications"<sup>11</sup> The Department of Health and Human Services says that the 1992 ANSI/IEEE standard "as written, lacks a full explanation of its

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<sup>10</sup>NPRM at para. 8.

<sup>11</sup>See comments of EPA at 1.

basis,” and says it is “unclear what types of biological effects and exposure conditions are addressed by the standard.”<sup>12</sup>

This disagreement reinforces the long-standing need for a federal standard for human exposure to radiofrequency radiation. The absence of a federal standard results in differing, conflicting, and confusing criteria by various bodies. In certain cases, the differing criteria have little scientific basis. Ideally, a federal standard would preempt state and local standards, so that public radio broadcasters experience fair and consistent treatment nationwide. Without a federal standard, the issue of RFR exposure will remain needlessly complex and controversial.

To their credit, the FCC and the National Telecommunications and Information Administration (NTIA) have tried since 1982 to have a federal standard created by the EPA. Unfortunately, in 1988 the EPA halted a major initiative to set federal guidelines. NPR urges the Commission to actively seek development of a federal RFR standard. It is probably appropriate for the EPA to complete this task because it is the only agency with the broad authority to issue guidelines for public exposure to radiofrequency radiation

## IX. CONCLUSION

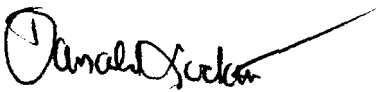
Upon selection of a new RFR standard, the impact of that standard to public radio must be analyzed more thoroughly than the Commission has done so far. Stations must know the proper procedures for measurement of RFR. Analysis techniques that can be performed without the need of measurements should be used to the maximum extent possible to minimize compliance costs to stations. The issue of standards for RFR measurement equipment and protective clothing needs to be closely scrutinized.

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<sup>12</sup>See comments of the Department of Health and Human Services at 1.

The Commission should consider initiating further Notices of Proposed Rule Making so that the important information submitted early in this proceeding may be weighed and further impact analysis performed. Stations should have sufficient time to comply with any new RFR standards. Finally, the Commission should renew its efforts for establishment of a federal RFR standard.


Respectfully submitted,



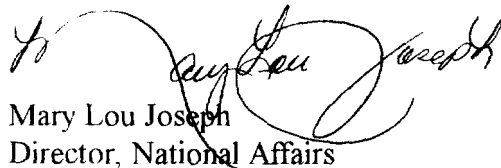
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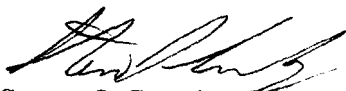


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